

Notice of Allowability**Application No.**

10/599,144

Applicant(s)

FUDERER ET AL.

Examiner

Tiffany A. Fetzner

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/13/2008 & the telephonic interview of 11/24/2008.
2. ☒ The allowed claim(s) is/are Ex. Amended claims 1-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 12/08/2008.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with **Attorney Thomas E. Kocovsky Jr. Reg. No. 28, 383 on Dec. 8th 2008** along with authorization to charge any necessary fees to applicants deposit account.
3. The application has been amended as follows:

A) Replace claim 1 of the August 13, 2008 amendment and response with the following Examiner amended claim 1:

Claim 1 --- A magnetic resonance imaging system, comprising:
a substantially cylindrical cavity which receives a subject to be examined the cavity having an axis of symmetry in the direction of the z-axis;
wherein the subject has **an intrinsic** conductance, which is not isotropic in an xy-plane, which is perpendicular to the z-axis;
an electrically conductive material disposed **with the received subject**, within the cavity, the electrically conductive material having an electrical conductivity and a thickness, which render a total electrical conductance in the xy-plane **including the received subject and the electrically conductive material**, within the cavity, isotropic.

B) Replace claims 7-11 of the August 13, 2008 amendment and response with the following Examiner amended claims 7-11:

Claim 7 --- The system according to **claim 1**, wherein the electrically conductive material extends along and above or below a surface on which **received** subject is supported in the cavity. ---

Claim 8 --- The system according to **claim 1**, wherein the **electrically conductive** material has a planar resistance between **5 ohms (Ω)** and **20 ohms (Ω)**. ---

Claim 9 --- The system according to **claim 7**, wherein the **electrically conductive** material is above the received subject and has a planar resistance between **5 ohms (Ω)** and **10 ohms (Ω)**.. ---

Claim 10 --- The system according to **claim 1**, wherein the **electrically conductive** material is below the **received** subject and has a planar resistance between **12 ohms (Ω)** and **16 ohms (Ω)**.. ---

Claim 11 --- The system according to **claim 1**, wherein the **electrically conductive** material **is formed as or is part of** a flexible sheet configured to be laid on or under the **received** subject, the **flexible** sheet being covered by a conductive layer **of the electrically conductive material**. ---

C) Replace claims 14, through 17 of the August 13, 2008 amendment and response with the following Examiner amended claims 14, 15, 16, 17:

Claim 14 --- A magnetic resonance imaging system, comprising:
an examination region, which receives a region of a subject to be imaged, which subject has an asymmetry in conductance in a plane due to a first dimension that is greater than a second dimension **of the subject**;

and RF coil assembly **configured** for generating RF excitation (B_1) fields, the asymmetry in the conductance of the imaged subject, causing an inhomogeneity in the generated RF excitation (B_1) fields;

an electrically conductive material disposed along the second dimension **of the subject within the received region**, the electrically conductive material having an electrical conductivity, which renders the **total** conductance of the subject **and the electrically conductive material within the received region** more symmetric thereby reducing the inhomogeneity in the RF excitation (B_1) fields **when MRI imaging is performed on the subject being imaged**. ---

Claim 15 --- The magnetic resonance imaging system according to **claim 14** wherein the second dimension is generally vertical and the **electrically** conductive material **is formed as or is part of** an electrically conductive sheet, which is placed on or under the **received** subject. ---

Claim 16 --- The magnetic resonance imaging system according to **claim 14** wherein the electrically conductive **flexible** sheet includes a carbon coating. ---

Claim 17 --- The magnetic resonance imaging system according to **claim 14** wherein the electrically conductive material includes an electrically conductive strip mounted **over and or** under a subject but not along the sides of the subject. ---

D) Replace **claim 18** of the **August 13, 2008** amendment and response with the following with the following **Examiner amended claim 18**:

Claim 18 --- A method of improving RF field homogeneity in magnetic resonance imaging, the method comprising:

placing a strip of electrically conductive material along a subject such that an intrinsic electrical conductance of the subject in a transverse plane becomes more isotropic thereby improving the RF field homogeneity; and

performing a magnetic resonance imaging sequence on the subject and the strip
of electrically conductive material with the improved RF field homogeneity. ---

The following is an examiner's statement of **Reasons for Allowance**:

4. With respect to **independent claims 1, 14 and 18**: these claims are considered to be allowable over the prior art of record because the prior art of record neither discloses nor suggests improving the homogeneity or reducing the inhomogeneity in a magnetic resonance apparatus by controlling the total conductance of the subject received by the MRI apparatus. Through the use of an electrically conductive material as set forth in applicant's Examiner amended independent claims. It is the common nation of features taken as a whole. In each of the set forth independent claims, which distinguish applicants invention over the prior art of record. None of the prior arts of record address adjusting the intrinsic total conductance of the patient. The associated dependent claims are considered allowable because they each depend from an allowable independent claim. It is the entire combination of the claim limitations taken as a whole, for each claim. that constitutes both the novelty and non-obviousness of applicant's claims.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance"

Prior Art of Record

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- A) **Jesmanowicz et al.**, US patent **6,294,972 B1** issued September 25th 2001.
- B) **Segawa** US patent **5,865,177** issued February 2nd 1999.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday, Wednesday, and Friday-Thursday from 7:00am to 2:10 pm., and on Tuesday and Thursday from 7:00am to 5:30pm.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Diego Gutierrez**, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TAF/
December 31, 2008

/Brij Shrivastav/
Primary Patent Examiner
Technology Center 2800